PRODUCTION OF BISCUITS

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Inventor(s): NAKAJIMA HIROKO
Applicant(s): EZAKI GLICO CO LTD
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Abstract

PROBLEM TO BE SOLVED: To obtain a food good in mechanical compatibility with rotary molders, etc., and good in texture by molding a biscuit dough prepared by adding wheat flour to roasted wheat flour. SOLUTION: (A) Wheat flour is added to (B) roasted wheat flour to impart a proper viscosity to the dough used in a biscuit-molding process. The component B is used in an amount of preferably >=75wt.% based on the whole wheats, and gives biscuits (including cookies, crackers, etc.,) enabling to satisfy the aspects of textures, such as good solubility in mouths and crispy texture.

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(71)出願人　000000228
江崎グリコ株式会社
大阪府大阪市西淀川区歌島４丁目６番５号
(72)発明者　中嶋　比呂子
奈良県生駒郡平群町緑ヶ丘４丁目13番地３号

(54)【発明の名称】　ビスケット類の製造法

(57)【要約】
【目的】　ビスケット、クッキー、クラッカー、パイ等における機械適性良く膨化や食感に優れた焼菓子を製造する。
【構成】　通常の小麦粉をロースト小麦粉で一部置換している原料を採用して、ビスケットを焼成する。

【特許請求の範囲】
【請求項１】　焼成前のビスケット生地にロースト小麦粉を添加することを特徴とするビスケット類の製造法。
【請求項２】　ロースト小麦粉を全小麦粉量のうち、７５～１００％の範囲にて使用することを特徴とする請求項１に記載のビスケット類の製造法。
【請求項３】　焼成前のビスケット生地にロースト小麦粉を添加し、ロータリーモールダーを用い成形することを特徴とするビスケット類の製造法。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は機械適性が良くサクサクした食感を有するビスケット類を製造する方法に関するものである。
【０００２】
【従来の技術と問題点】従来、ビスケット類は小麦粉を主原料として製造されてきた。この製造において小麦粉にふくまれる蛋白の１つであるグルテンはその特異な性質により出来上がり製品の膨化や食感の形成上欠くことの出来ないものであったが、反面その量の多寡や質の良否は食感を大きく変えてしまう。特に油脂量の多いビスケットにおいては小麦粉中のグルテンが少なく且つその形成能力が弱いものが良質とされ、グルテン含有量の多いものや、形成能力の強い小麦粉を止むをえず用いた場合でも食感を改良するため、混合生地にプロテアーゼを添加し、混合中に形成されたグルテンのネットワークを適当に切断する方法や、配合中にコーンスターチ等の澱粉を添加することが行われてきているのは周知の通りである。しかしながらこれらの処理においても、なお口どけやサクサクした食感といった製品の食感面で満足できないものがあり、それを一層改良する新たな方法が強く望まれていた。
【０００３】さらにビスケットの成形機械の１つであるロータリーモールダーを用いるビスケットの製造方法は均一な形のビスケットが高速で成形される為、産業上の利用価値の高い製造方法であるが、反面、機械の安定的な高速運転を可能にする為にはビスケットの配合に厳しい制限が加えられ、所謂機械適性の狭い製造方法でもあった。
【０００４】
【問題点を解決するための手段】本発明者は鋭意工夫を行った結果、焼成前の生地における配合中の小麦含有量の一部を加熱処理した小麦粉に置換することによって、上記の問題点を解決したものである。
【０００５】本発明にいうビスケット類としては、ビスケット、クッキー、クラッカー、パイなどが挙げられる。
【０００６】ロースト小麦粉は焙煎した小麦粉又は焙煎によるのと同じようなグルテン失活の効果を持つ処理による小麦粉、例えば、広義の電磁波にて処理された小麦粉でも良い。また、熱さえ小麦粉に加われば小麦粉含有のグルテンを失活できるので、加熱水蒸気で処理したものであっても良い。
【０００７】グルテンは、通常完全に失活しておればよく、その範囲においてローストの深浅は特に重要ではない。なお、失活の程度は後述する方法によって測定する。ロースト小麦粉の使用量は、全小麦粉量のうち、７５～１００％、特に８０～１００％がよいようである。
【０００８】常法に則りビスケットの生地を調製する。その際、通常の小麦粉の一部を本発明にいうロースト小麦粉に置換する。
【０００９】水、油脂、糖分等の添加については常法と同様で良く、特に本発明の実施において常法と異なる方法を採用する必要はない。
【００１０】混合の終わった生地は常法によって、適宜成形するが、請求項３においてはロータリーモールダーは通常のものでよい。成形が済めば焼成する。ビスケット類の種類によっては成形工程中に砂糖、ナッツ等をふりかけたり、アルカリ、卵黄等を塗布してもよい。
【００１１】活性グルテンの測定方法はＪｏｎｅｓ，Ｒ．Ｗ．，Ｔａｙｌｏｒ，Ｎ．Ｗ．ａｎｄ　Ｓｅｎｔｉ，Ｆ．Ｒ．，Ａｒｃｈ．Ｂｉｏｃｈｅｍ．Ｂｉｏｐｈｙｓ．，８４，３６３（１９５９）に記載されている方法によった。つまりｎ－ブタノールで脂質を抽出除去した脱脂小麦粉に水を加えて捏ねてドウを作った後、０．１％食塩水中で澱粉と水溶性成分を洗い出してグルテン・ボールを得る。グルテン・ボールに２０倍量の０．０１Ｎ酢酸を加えワーリング・ブレンダーで激しく撹拌してグルテンを分散させたのち、２０、０００×ｇで遠心分離して不溶物質を沈殿除去すると透明なグルテンの分散液が得られる。９８～１００℃に加熱してプロテアーゼ活性を失活させたのち凍結乾燥したものを活性グルテンとして秤量する。
【００１２】
【作用】本発明による作用機序は以下の如くであろうと推測される。すなわち、ビスケットの成形工程においてはその成形機械によって、適度の粘りが生地に要求される、しかるに使用する小麦粉や生地混合の過程、条件においてはその適度の粘りが得られない場合がある。粘りのもとは専ら小麦中に存在する蛋白質であるグルテンが水、空気の存在下においてネットワークを作ることによりものである。ロースト小麦粉は蛋白質であるグルテンを加熱により失活しており、これの適量を小麦粉に置換することによって、過剰なグルテンのネットワーク形成が回避でき、望みどおりの生地物性が得られるのであろう。
【００１３】
【実施例】以下に実施例により本発明をさらに詳細に説明する。
【００１４】表１の配合に基づき、常法によりビスケッ

トを試作した。ロースト小麦粉には加熱処理によりグルテンを失活させ、活性グルテンを含有していない市販のもの（日清製粉株式会社製）をもちいた。ビスケットの混合方法は市販の縦型ケーキミキサー（２０コート）を用い、以下の順序にて原料を混合した。

① バターを低速にて約１分間撹拌し、柔らかくする。

② 砂糖、塩及び水を添加し、更に約１分間高速にて混合する。

③ 小麦粉、ロースト小麦粉を加え、低速にて約３分間混合する。

【００１５】次にビスケットを成形する。成形は通常のロータリーモールダーによって行い厚さ約７ｍｍ縦３５ｍｍ横２５ｍｍの成形型を用いて成形した。続いてバッチ式電気オーブンにて摂氏２００度にて１０分間焼成した。焼成前の生地の性状、ロータリーモールダーへのかかり具合及び得られたビスケットの食感を第２表及び第３表に示す。これによれば、本発明品（配合１及び配合２）が優れていることが判る。

【００１６】

【表１】

	比較例	配合１	配合２	配合３	配合４
小麦粉	１７５	１４０	－－	１４０	－－
ロースト小麦粉	－－－	３５	１７５	－－	－－
コーンスターチ	－－	－－	－－	３５	１７５
バター	９０	９０	９０	９０	９０
グラニュー糖	１０	１０	１０	１０	１０
粉糖	４０	４０	４０	４０	４０
食塩	１	１	１	１	１
水	０	０	０	０	１５

（単位ｇ）

【００１７】

【表２】

	比較例	配合１	配合２
混合後の性状	軟らかいこしあん状で粘りがある	こしあん状で粘りが無い	そぼろ状
ロータリーモールダへのかかり具合	型離れがやや悪く生地に粘りが出てくる	型離れ良い	型離れが非常に良く生地に粘りが生じない
食感	固く口溶け悪い	やや固い 口溶け悪い	柔らかい 口溶け良好

【００１８】

【表３】

	配合３	配合４
混合後の性状	粘り、つながりともに無し	らくがん状
ロータリーモールダへのかかり具合	型離れ悪い	型離れが非常に悪い
食感	柔らかい 粉っぽさ有り	柔らかい 粉っぽさ強い

【００１９】

【効果】本発明によってビスケット類を製造すると、従

来の製造法で製造した場合に比較し、優れた機械適性を　　有する良好な製品を得ることができる。

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CLAIMS

[Claim(s)]
[Claim 1] The manufacturing method of the biscuits characterized by adding roast wheat flour to the biscuit ground before baking.
[Claim 2] The manufacturing method of the biscuits according to claim 1 characterized by using roast wheat flour in 75 - 100% of range among the total amounts of wheat flour.
[Claim 3] The manufacturing method of the biscuits characterized by adding roast wheat flour to the biscuit ground before baking, and fabricating using rotary mho RUDA.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to the method of manufacturing the biscuits which have the feeling of a meal which machine aptitude improved with a crunching sound.
[0002]
[Description of the Prior Art] Conventionally, biscuits have been manufactured considering wheat flour as a main raw material. Although the gluten which is one of the proteins contained in wheat flour in this manufacture was done with the unique property and could not be lacked on bulking of a product, or formation of a feeling of a meal, on the other hand, the amount of the amount and a nature quality will change a feeling of a meal a lot. Even when what has few gluten in wheat flour with the weak organization potency force is made good in a biscuit especially with many amounts of fats and oils and what has many gluten contents, and wheat flour with the strong organization potency force are used unavoidably, in order to improve a feeling of a meal, It is well known that adding a protease to the mixed ground and adding starch, such as corn starch, the method of cutting suitably the network of the gluten formed during mixture, and during combination has been performed. However, also in these processings, there are some it can be satisfied [with neither ****** nor ****** of a product called a feeling of a crunchy meal] of some in addition, and a new method of improving it further was desired strongly.
[0003] Since the biscuit of a uniform form was fabricated at high speed, although the manufacture method of the biscuit using rotary **-**** - which is furthermore one of the forming machines of a biscuit was the high manufacture method of the utility value on industry, in order to, enable stable high-speed operation of a machine on the other hand, the severe limit was added to combination of a biscuit and it was also the so-called narrow manufacture method of machine aptitude.
[0004]
[Means for Solving the Problem] this invention person used to solve the above-mentioned trouble by replacing by the wheat flour which heat-treated a part of wheat content under combination in the ground before baking, as a result of devising wholeheartedly.
[0005] A biscuit, Cookie, a cracker, a pie, etc. are mentioned as biscuits said to this invention.
[0006] The wheat flour by processing with the effect of the gluten deactivation same with being based on the roasted wheat flour or the roast, for example, the wheat flour processed by the electromagnetic wave of a wide sense, is sufficient as roast wheat flour. Moreover, since the gluten of wheat flour content can be deactivated if it obtains in heat and joins wheat flour, you may process with a heating steam.
[0007] In the range, especially **** of a roast is not [that gluten has just usually deactivated completely] important. In addition, the grade of deactivation is measured by the method of mentioning later. It seems that 80 - 100% of especially the amount of the roast wheat flour used is good 75 to 100% among the total amounts of wheat flour.
[0008] A conventional method is followed and the ground of a biscuit is prepared. A part of usual wheat

flour is replaced by the roast wheat flour said to this invention in that case.
[0009] It is not necessary to be the same as that of a conventional method, to be good, and to adopt a different method from a conventional method especially in operation of this invention about addition of water, fats and oils, sugar, etc.
[0010] Although the ground which mixture finished is suitably fabricated by the conventional method, in a claim 3, rotary **-**** - is easy to be the usual thing. It will calcinate, if fabrication ends. Depending on the kind of biscuits, sugar, nuts, etc. may be sprinkled into a forming cycle, or alkali, the yolk, etc. may be applied.

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TECHNICAL FIELD

[Industrial Application] this invention relates to the method of manufacturing the biscuits which have the feeling of a meal which machine aptitude improved with a crunching sound.

[Translation done.]

EFFECT OF THE INVENTION

[Effect] If biscuits are manufactured by this invention, as compared with the case where it manufactures by the conventional manufacturing method, the good product which has the outstanding machine aptitude can be obtained.

[Translation done.]

TECHNICAL PROBLEM

[Description of the Prior Art] Conventionally, biscuits have been manufactured considering wheat flour as a main raw material. Although the gluten which is one of the proteins contained in wheat flour in this manufacture was done with the unique property and could not be lacked on bulking of a product, or formation of a feeling of a meal, on the other hand, the amount of the amount and a nature quality will change a feeling of a meal a lot. Even when what has few gluten in wheat flour with the weak organization potency force is made good in a biscuit especially with many amounts of fats and oils and what has many gluten contents, and wheat flour with the strong organization potency force are used unavoidably, in order to improve a feeling of a meal, It is well known that adding a protease to the mixed ground and adding starch, such as corn starch, the method of cutting suitably the network of the gluten formed during mixture, and during combination has been performed. However, also in these processings, there are some it can be satisfied [with neither ****** nor ****** of a product called a feeling of a crunchy meal] of some in addition, and a new method of improving it further was desired strongly.
[0003] Since the biscuit of a uniform form was fabricated at high speed, although the manufacture method of the biscuit using rotary **-**** - which is furthermore one of the forming machines of a biscuit was the high manufacture method of the utility value on industry, in order to, enable stable high-speed operation of a machine on the other hand, the severe limit was added to combination of a biscuit and it was also the so-called narrow manufacture method of machine aptitude.

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MEANS

[Means for Solving the Problem] this invention person used to solve the above-mentioned trouble by replacing by the wheat flour which heat-treated a part of wheat content under combination in the ground before baking, as a result of devising wholeheartedly.
[0005] A biscuit, Cookie, a cracker, a pie, etc. are mentioned as biscuits said to this invention.
[0006] The wheat flour by processing with the effect of the gluten deactivation same with being based on the roasted wheat flour or the roast, for example, the wheat flour processed by the electromagnetic wave of a wide sense, is sufficient as roast wheat flour. Moreover, since the gluten of wheat flour content can be deactivated if it obtains in heat and joins wheat flour, you may process with a heating steam.

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OPERATION

[Function] It is surmised that the action mechanism by this invention will be as the following. That is, in the forming cycle of a biscuit, the moderate stickiness may not be obtained by the forming machine in the wheat flour which moderate stickiness is required of the ground, however is used, the process of ground mixture, and conditions. The basis of stickiness is a thing when the gluten which is the protein which exists in wheat chiefly makes a network under existence of water and air. By roast wheat flour's having deactivated the gluten which is protein by heating, and replacing the optimum dose of this by wheat flour, network formation of superfluous gluten can be avoided and the ground physical properties as a wish will be acquired.

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EXAMPLE

[Example] An example explains this invention further below at a detail.
[0014] Based on combination of Table 1, the biscuit was made as an experiment by the conventional method. Gluten was made to deactivate by heat-treatment in roast wheat flour, and it was with the thing (Nisshin Flour Milling Co., Ltd. make) of marketing which does not contain activity gluten. The mixed method of a biscuit mixed the raw material in following sequence using the commercial vertical-mold cake mixer (20 quart).
** Stir butter for about 1 minute at a low speed, and make it soft.
** Add sugar, a salt, and water and mix at high speed for about 1 minute further.
** Add wheat flour and roast wheat flour and mix for about 3 minutes at a low speed.